Homeland Security: Response

Case Study: Management of a Confirmed SARS Case on Campus

Summary: Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus. SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia. According to the World Health Organization (WHO), the SARS outbreak of February – July 2003, resulted in a total of 8,437 SARS cases and 813 deaths; a relatively high mortality rate. In the United States, there were 192 cases of SARS, and no deaths. Experts believe that SARS spreads by close person-to-person contact; transmitted most readily by respiratory droplets produced when an infected person coughs or sneezes.

At the University of North Carolina in Chapel Hill, the school year was coming to a close and students were preparing for summer travel. In response to SARS events worldwide, a special announcement was made during the May 2003 commencement week warning students of the potential risks of SARS and to evaluate their travel to certain areas. Visitors from affected areas were told to monitor for symptoms, and not attend ceremonies if they were at risk for SARS. However, when university staff received a call from county public health officials on June 5 concerning a potential SARS case who had recently worked on campus, administrators had to act. The risk of a secondary transmission, on campus or within the community, threatened university and UNC Hospitals operation. How the University managed the situation is discussed in this case study.

Campus Profile

The University of North Carolina
Chapel Hill, NC
UG Students: 15,900
Grad Students: 7800
Resident Students:
Faculty/Staff: 3000/9895
Campus Area: 729 Acres
Operating Budget: $1.477 B (2002)
UNC Hospitals:
NC Memorial Hospital; NC Children's Hospital; NC Women's Hospital; and NC Neurosciences Hospital.

Project Goals

For the University, it was important to:

- Protect the health and safety of its students, faculty, staff and visitors,
- Maintain effective employee relations,
- Ensure continuing communication with students and parents,
- Maintain communication with other interested community stakeholders,
- Sustain business continuity for both the university and UNC Hospitals

The University is closely associated with, in operations and location, the University Hospitals, but function as a separate state agency. UNC Hospitals acted quickly to avoid the incapacitating havoc that SARS wreaked in Asian and Toronto hospitals. UNC Hospitals focused on:

- Preventing SARS transmission to hospital staff (50% of Toronto SARS cases were healthcare workers),
- Preventing the disruption of UNC Hospitals clinics and facilities due to outbreak control measures (business continuity),
- Prevent from being labeled as a "SARS hospital," with commensurate damage to reputation and business.

Description of Issue/Problem

There is no treatment for SARS. Due to the high risk of transmission in a healthcare setting, confinement in a healthcare facility is not recommended. Instead, many patients are isolated and kept at home unless respiratory symptoms necessitate hospitalization. The incubation period is usually 5-7 days, but can take up to ten days for symptoms to occur. Some reports have indicated a lag time of 13-16 days.

On June 3, 2003, North Carolina reported its ninth case of suspected SARS, an Orange County man (the Index Case), to the Centers for Disease Control and Prevention (CDC). UNC became informed of this suspect SARS case, and his contact with UNC personnel on Thursday June 5. The individual had worked as a contactor on campus in the Giles Horney Building from May 21-23, while asymptomatic. The building houses about 250 employees. The Index Case became symptomatic on May 24, so risk to UNC staff was deemed to be very small or none. However, employees became immediately concerned about the risk of contracting SARS.

TIME LINE

5/17 –Index Case in contact with SARS in Toronto
5/18 –Index Case leaves Toronto
5/21 to 23- Index Case at UNC
5/24 –Index Case develops symptoms
6/2 – 10 day incubation period over
6/5 – UNC notified of case with Index Case
6/6 -Suspect case reclassified as "probable"
6/9 - CDC laboratory tests positive, Index Case reclassified to "confirmed."
6/14 – Index Case isolation period ends.

Pre-Project Considerations

The emergency response committee should have pre-established procedures and communications protocols to manage incidents on campus.

Monitor applicable events worldwide for new risks to public health and the environment, and take steps to prepare for them.

Steps Taken

Thursday, June 5, 2003

- UNC alerted to the Index Case at 9:30 AM.
- Orange County Public Health (OCPH) interviewed three UNC coworkers with closest contact, as reported by Index Case.
- OCPH drafted letter to UNC coworkers, describing current knowledge and activities. Letter distributed via email to 325 staff in building in which Index Case worked.
- UNC Emergency Warning Committee meets. An informational email was drafted to all faculty and staff for distribution that night.

Monday, June 9, 2003

- Case reclassified as "confirmed". Updated email sent to all UNC employees.
- Directed all requests for information to UNC Hospitals HealthLink. Added additional staff to phone lines
- Callers classified as 'worried well' referred to the University Employee Occupational Health Clinic (UEOHC), or their primary care provider.
- UNC Hospitals:
    - Developed internal policy and procedures for SARS-suspect patients, including staff PPE requirements.
    - Installed signs on all doors, advising SARS-risk patients to go to designated emergency entrance. Posted guards at these locations.
    - Established special examination entrance and rooms.
    - In case of epidemic, began search for off-site screening facility.
- Schedule at University Employee Occupational Health Clinic (UEOHC) cleared to fit test healthcare providers.

Some Definitions:
Worried Well: People that are worried that they might have the disease, yet are not physically ill or symptomatic.
Worried Sick: People that are having health issues and may be symptomatic, but do not have the disease in question.

- Symptomatic, potentially exposed callers referred to Infectious Disease Hospital staff for a phone evaluation. If necessary, arrangements were made for physical exams.

June 10, 2003

- UNCH requested that the State Division of Public Health initiate a daily teleconference for public health, UNCH, and UNC technical staff.
- Meeting held with 150 employees from the Giles Horney Building to address concerns and questions.

June 11, 2003

- The UNC Emergency Warning Committee considered temporarily closing Giles Horney due to employee concerns; the final decision was to keep the building open.
- Before-work temperature monitoring procedure discussed and adopted. EHS ordered 400 digital thermometers overnight.
- UNC Hospitals, EHS and UEOHC proceeded with plans to establish temporary screening facility, with Giles Horney employees becoming their primary concern.
- N-95 respirators ordered.

June 12, 2003

- Identified screening facility site. Tents set up that night.
- EHS prepared mobile fit-testing facility and continued search for N-95 respirators.
- Employee meeting held to announce temperature program and screening facility. A discussion ensued on cleaning the building; health questionnaires distributed.

June 13, 2003

- UNC Hospitals prepared for lockdown of all hospital and clinic entrances.
- EHS continued distribution of surveys and thermometers.
- First state news conference conducted by State Division of Public Health.
- Screening Facility opened for employees and family with symptoms. Capacity of about 6-12 persons per hour.
- Created a registration report for employees and established medical record numbers.
- Established and staffed a mobile fit-testing facility.
- Continued to look for additional N-95 respirators.
- Set up external shielding for portable X-ray unit.

Why a Screening Facility?
UNC established a screening facility to better control the incident. By having medical and health professionals in a separate location they were able to manage the concerns of employees and their families, avoid disruption of hospitals and clinics, and avoid any potential SARS from entering the hospitals.

SARS Info and Advisories http://ehs.unc.edu/ueohc/sars.shtml

Tools Used

The Screening Facility consisted of multiple stations:

- Registration
- History and counseling
- Physician evaluation
- Portable chest X-ray

The following was used to construct and outfit the screening facility:

- Black-out fencing
- Tents – some purchased from local stores, three inflatable tents borrowed from Charlotte Fire Dept, and "Decon" tents borrowed from OCPH
- Tables and chairs
- Wiring, receptacles and T1 connections

- Air conditioners for inflatable tents, powered by rented generators
- Water coolers
- Interior lighting
- Trash receptacles
- Domestic water storage tank and pump
- Temporary towel and hand sanitizer dispensers
- Thermometers, sphygmomanometers, etc. bought overnight from area stores
- Gloves, gowns, etc. from UNCH Central Distribution
- Rental trucks to hold supplies

What is Fit Testing?
All respirators that rely on a mask-to-face seal need to be checked by qualitative or quantitative methods to determine if the mask provides an acceptable fit to a wearer. Before an employee may use any respirator with a negative or positive pressure tight-fitting face-piece, the employee must be fit tested to ensure a proper fit.

Participants

- Charlotte Fire Dept (loaned tents)
- Orange County Public Health (OCPH) Officials
- Center for Disease Control Contact for OCPH
- University of NC Hospitals – various departments to include the Infectious Disease Staff and Security.
- University of North Carolina – Chancellor, Dean of the School of Public Health, Expert Researchers, General Counsel, EH&S, HR, IT, Facilities Services, Public Relations, Police/Security
- Screening Facility consisted of 32 staff:
  - UNCH: screening (5), nurses (4), radiation technician (1), medical technician (1), UNCH EHS (2), Van shuttle (1), Ground transport to Carolina Air Service (2)
  - UNC Physicians (4-5)
  - UNC Facilities Services (5)
  - UNC School of Nursing volunteers (5)
  - UNC EHS: reception (1), fit testing (3) radiation safety (2)
  - UNC Public Safety (2)

Performance and Benefits

The construction and operation of the screening facility was handled extremely well and did not become the media circus that CDC feared.

Total number of persons screened = 42
Total number of persons referred to MD = 10
Total number of persons referred to Hospital = 2 (not SARS related)

EH&S properly fitted 63 people for the N-95 respirator from June 9-13.

EH&S distributed 531 thermometers. Employees were asked to take their temperature before work and not come to work (deemed administrative leave) if fever or respiratory symptoms existed. UNC IT staff collected and reported on the data. Only two people reported temperatures between 99.8-100.4 degree F. There was no abuse of administrative leave.

Health Questionnaire – 250 were distributed and 184 were sent back. Of those participating in the survey, 11 had both fever and cough, but none had contact with the index case. If participant not seen at the screening tent, they were referred to the Health Director in the County in which they live for follow-up. The State Division of Public Health concluded that, "It is unlikely that SARS was spread in the Giles Horney building."

Financial Info
Cost of SARS Screening Facility (costs were minimized as most staff were exempt from overtime)

Facilities Services
Materials $6,516
AC Units $8,950
Labor $ 11,133
Communications $1,880

EHS
N-95 Respirators $990
Thermometers $4,470
Overtime pay $690

UNC's emergency warning committee met nearly each day during the incident. It included responders, experts, policymakers, administrators, and other key people. Working by committee allowed the design of new procedures (ie. the thermometer program) and access to various resources. The group engaged in critical thinking asking questions about how to prepare for the next move.

No SARS cases were reported in connection to the Index Case. If a secondary transmission had occurred, the incident command system and emergency operations center would have been activated.

Lessons Learned

Risk Communication standards should be followed - demonstrate employer responsiveness, openness and trust. In general, more information (rather than less) and action improves relations with stakeholders.

Set forth a unified front about health issues to minimize dissonance. This includes technical experts and medical professionals attending employee meetings

Finding respirators was challenging and could have been a serious issue if more cases had developed. At the time, there were no 3M 1860 or 3M 1860S respirators available in the U.S.

University and Hospital officials need to stand firm that all involved team members wear personal protective equipment; PPE is one of the best defenses against SARS.

Emails to employees are not always an effective communication method. They can be confused with previous SARS emails, attachments might not be opened, some people don't check their email frequently or give it only a cursory reading, and some employees don't have email.

The University Employee Occupational Health Clinic was easily and quickly overwhelmed with questions, fit-testing and regular business.

There will always be a population of people who will have health issues. So in addition to the people who were affected, there can be false positives, and "worried sick" (in contrast to the "worried well") individuals who think they have the disease but don't. Expect and plan for these issues.

Begin daily public health teleconferences as early as possible. UNC reports that they should have started the briefings on June 6.

Send out a final notice to all employees so they know when the incident 'is over'. Include lessons learned, and other important information that should be relayed regarding closure of the incident.

Public Health Officials should take a leadership role, avoid ceding public health responsibilities to the employer. Engage public health officials in decision making and risk communications.

Openly discuss contingency plans and responsibilities with public health officials—understand how each parties interests and needs may differ.

Provide clear advice to political decision-makers to prevent decisions that are not technically supported.

Partner with a medical center that can provide emergency backup triage, screening and care.

Next Steps

After the incident, UNC established a Task Force to:

- Provide guidance to faculty, staff, students and families (ie., SARS Updates, Travel Policies, Study Abroad Policies).
- Plan for possible quarantine of large numbers of students (tabletop planning exercise conducted by Student Affairs).
- Plan with County Officials including the Health Department.
- Identify alternative sites for off-site screening.
- Promote flu shots for students, faculty and staff.
- Determine the feasibility of an infectious disease clinic that meets airborne isolation guidelines and can be accessed directly from outside.
- Investigate the possibility of appointing an internal communications officer within Environmental Health and Safety.
- Consider Nextel phones/walkie-talkies for easier communication during events.
- Set up designated medical screening area on campus for quick and easy access in the event of another incident on campus.
- Continue to review incident internally and with local officials.
- The UNC Hospital Infectious Disease Unit is remodeling so that access to the unit is through an external door.
- Lab tests for SARS can be performed at the UNC Hospital; specimens no longer need to be sent to CDC.
- UNC Hospitals are working with other area hospitals so UNC is not the only designated SARS treatment center.
- Continue to educate University and Hospital staff on roles and responsibilities in the event of another incident on campus.
- Coordinate drills on campus and at the hospitals. Lessons learned and new procedures will be incorporated into existing contingency plans.

For Further Information

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Thank you to Peter Reinhardt and Mary Crabtree from the University of North Carolina at Chapel Hill for sharing this important story.

UNC Chapel Hill EH&S Web Site
http://ehs.unc.edu/

June 2003 News Stories on the SARS Incident:
http://www.triangle.com/triangle.com/communities/chapelhill/story/2607507p-2419499c.html
http://newsobserver.com/news/story/2608944p-2420761c.html